



U.S. Army Research Institute for the Behavioral & Social Sciences

FACT SHEET



Use of Laser Marksmanship Training System (LMTS) enables USAR to better train for, and predict, rifle marksmanship qualification

Summary

An LMTS-based tool was developed for predicting the chances of successful live-fire, rifle marksmanship qualification. This tool enables both more efficient scheduling of device-based sustainment training by targeting only those soldiers in need of remediation, and the identification of when enough remediation has been provided. In doing so, it provides a set of device-based, empirically derived live-fire performance standards to support (a) competency-based sustainment training with LMTS, and (b) use of LMTS, in place of live fire, for qualification purposes when outdoor range facilities are not readily available.

Purpose

Budget cutbacks, escalating ammunition costs, reduced access to live-fire ranges, and ever-present training time constraints have prompted the U.S. Army Reserve (USAR) to search for better ways to train and evaluate rifle marksmanship through the use of training devices. To this end, the U.S. Army Research Institute (ARI) has been working in partnership with the USAR's 84th Institutional Training Division (DIVIT) and Small Arms Training Team (SATT) to develop and evaluate a device (i.e., the Laser Marksmanship Training System [LMTS])-based marksmanship training program for use at home station that will produce proficiency levels that meet, or exceed, unit readiness requirements while minimizing the resources needed to do so. As currently developed, this program calls for LMTS usage to (a) identify which soldiers need training, (b) support the reinforcement of marksmanship fundamentals by those in need, (c) signal when enough training has been provided, and (d) replace live-fire qualification with LMTS-based qualification when range facilities are unavailable. To support these objectives, device usage must be accompanied



by a set of empirically derived performance standards, and associated cutoff scores, tied to live-fire qualification performance expectancies.

Procedure

Accordingly, research was conducted to assess the relation between LMTS- and live-fire-based rifle marksmanship performance, using two groups of Reserve Component (RC) soldiers who fired for record on LMTS and on the range

Findings

From this relation, an LMTS-based tool was then developed from pooled group data to provide marksmanship trainers with the capability to predict the chances of individual soldier record fire qualification at the Marksman, Sharpshooter, and Expert levels (see Table 1). Using this tool, a soldier with an LMTS score of 19 (Column 1), for instance, would be predicted on the average to fire 26 on the live-fire range (Column 2) and have a 50% chance of successful record fire

Table 1. LMTS-Based Prediction Tool

LMTS Score	Predicted Average Live-Fire Score	Chances (%) of a Live-Fire Score		
		≥26	≥33	≥38
3	18	10	--	--
8	21	20	--	--
12	23	30	--	--
16	25	40	--	--
18	25	--	10	--
19	26	50	--	--
22	27	60	--	--
24	28	--	20	--
26	29	70	--	--
28	30	--	30	--
29	30	--	--	10
30	31	80	--	--
31	32	--	40	--
34	33	--	--	20
35	33	--	50	--
36	34	90	--	--
38	34	--	60	--
39	35	--	--	30

qualification at the Marksman level (Column 3), and a 10-20% chance of qualification at the Sharpshooter level (Column 4). A soldier with an LMTS score of 30 would be predicted to fire 31 on the range and have a 80% chance of qualifying Marksman, a 30-40% chance of qualifying Sharpshooter, and a 10-20% chance of qualifying Expert (Column 5), and so forth.

Use of Findings

When used during pretesting, this tool can serve as a diagnostic instrument to support quick and accurate assessments of a soldier’s need for sustainment training (when the likelihood of live-fire qualification is low), thereby ensuring that scarce sustainment training resources are devoted to those most in need. The tool can also be used after training (i.e., during post-

testing) to determine if enough has been provided (when the likelihood of qualification is good). Lastly, the tool provides an empirically derived set of marksmanship probabilities required for use in setting qualification standards, in the form of cutoff scores, on LMTS. Such standards would be required if, and when, the USAR should decide to use LMTS-based scores in lieu of range scores for purposes of yearly qualification at times when range facilities are not readily available.

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